

Application No. 10/623,370
SD-7250.1

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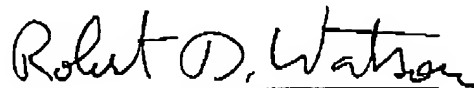
JUL 24 2006

CONCLUSION

Applicants have responded to each and every objection and rejection, and urge that claims **1-11, 17-21, 26-27, 29-31, 34-35, and 37-38** as presented and amended are now in condition for allowance. Applicants request expeditious processing to issuance.

The Office is authorized to charge **Deposit Account # 19-0131** for any necessary fees regarding this response.

Respectfully submitted,



Robert D. Watson
Reg. No. 45,604


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Customer No. 20567

Certificate of Transmission under 37 CFR 1.10

I hereby certify that this correspondence was transmitted via facsimile to the U.S. Patent and Trademark Office at phone number **571-273-8300** on **July 24, 2006**.



Robert D. Watson

1 page 1 of 1
SD-7250.1

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/623,370	07/18/2003	1614	1158	SD-7250	4	38	4

CONFIRMATION NO. 3175

FILING RECEIPT

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Applicant(s)

Mark D. Tucker, Albuquerque, NM;
Robert H. Comstock, Gardendale, AL;

Domestic Priority data as claimed by applicant

This application is a CIP of 10/251,569 09/20/2002
and claims benefit of 60/397,424 07/19/2002

Foreign Applications

If Required, Foreign Filing License Granted: 10/21/2003

Projected Publication Date: 01/29/2004

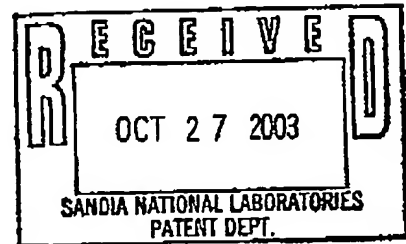
Non-Publication Request: No

Early Publication Request: No

Title

Decontamination formulation with sorbent additive

Copy sent to DOE 10/27/03



Mon, Jul 24, 2006 9:59 AM

Subject: <no subject>

Date: Monday, July 24, 2006 9:45 AM

From: Loukota, Mary <mloukot@sandia.gov>

To: "Watson, Robert D" <rdwatso@sandia.gov>

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Application Number: 60/397,424 Customer Number: 20567

Filing or 371 (c) Date: 07-19-2002 Status: Provisional Application Expired

Application Type: Provisional Status Date: 09-01-2003

Examiner Name: - Location: http://www.uspto.gov/ebc/portal/info_location.htm <[http://](http://www.uspto.gov/ebc/portal/info_location.htm)

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Group Art Unit: - Location Date: 08-07-2002

Confirmation Number: 8808 Earliest Publication No: -

Attorney Docket Number: SD-7250 Earliest Publication Date: -

Class / Subclass: - Patent Number: -

First Named Inventor: Mark Tucker Albuquerque, NM (US) Issue Date of Patent: -

Title of Invention: Powdered additive for DF-200

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SD-7250

IN THE UNITED STATES PATENT AND TRADEMARK OFFICEPROVISIONAL APPLICATION (35 U.S.C. § 1.111)**BEST AVAILABLE COPY**

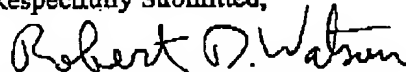
Assistant Commissioner for Patents
Box: Provisional Patent Application
Washington, DC 20231.

July 18, 2002

Sir:

In accordance with 35 U.S.C. 111(b), Applicants respectfully submit the enclosed invention description as a Provisional Patent Application: **Powdered Additive for DF-200**, by Mark D. Tucker, et al.

Respectfully Submitted,



Robert D. Watson, Ph.D.

Reg. No. 45,604

Patent Agent

Sandia National Laboratories

Patent & Licensing Center

Org. 11000, Mail Stop 0161

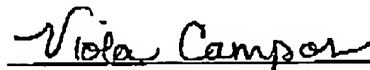
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CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this New Provisional Application Transmittal and the documents referred to as enclosed therein are being deposited with the U. S. Postal Service on the date indicated below, in an envelope, as "Express Mail" with Mailing Label Number _____ addressed to: Assistant Commissioner for Patents, Box: Provisional Patent Application, Washington, DC 20231.

July 19, 2002
Date
Viola Campos

Page 1 of 1

PROVISIONAL APPLICATION FOR PATENT COVER SHEET


This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTORS		
Given Name (first & middle)	Surname or Family Name	Residence (City and State or Country)
Mark D.	Tucker	Albuquerque, New Mexico, USA
Bob	Comstock	Gardendale, Alabama, USA
James W.	Morand	Scottsdale, Arizona, USA

TITLE OF THE INVENTION (280 characters max)
Powdered Additive for DF-200

CORRESPONDENCE ADDRESS
Direct all correspondence to: <input checked="" type="checkbox"/> Customer Number: 020567 which is: Sandia National Laboratories Patent and Licensing Center 11500 Mail Stop 0161 Albuquerque, NM 87185-0161

PATENT & TRADEMARK OFFICE



020567

ENCLOSED APPLICATION PARTS (CHECK ALL THAT APPLY)	
<input checked="" type="checkbox"/> Specification	Number of Pages: 4
<input checked="" type="checkbox"/> Drawing(s)	Number of Sheets: 0

<input checked="" type="checkbox"/> METHOD OF PAYMENT OF FEES FOR THIS PROVISIONAL APPLICATION The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account No: 19-0131
Filing Fee Amount: \$160

<input checked="" type="checkbox"/> This invention was made under Contract DE-AC04-94AL85000 with the United States Department of Energy
--

Respectfully submitted:

Date July 18, 2002

Docket No: SD-7250

Signature:


Robert D. Watson, Reg. No. 45,604

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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SP 1155-TO 2 (1-2002) (Supersedes 10-2001) (Rev. 1)

UCI-Patent Caution**Sandia National Laboratories****DISCLOSURE OF TECHNICAL ADVANCE***(Patent Office Use Only)***BEST AVAILABLE COPY****How to File a Technical Advance**

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- Attach copies of laboratory notebook pages, test data, photographs, and pertinent references (yours) and others. Color copies are preferred.
- This page must be signed by your organization's Authorized Derivative Classifier, a witness, and yourself.
- Send the Original and two copies to Patents, Org. 11500, MS 0161.

SD: 7250

S: _____

Assigned to: _____

B&R Code: _____

Descriptive Title: Powdered Additive for DF-200TA Preparer: Mark D. TuckerDate: 7/18/2002

TA Originators (Those associated with the development of the technology being reported)

Full Names (add name of Company or University if not a Sandia Employee)	SS No. (SNL only)	M/S	Org.	Phone
Mark D. Tucker	322-58-8508	0734	6245	505-844-7264
Bob Comstock, Envirofoam Technologies, Inc.				256-319-0137
James W. Morand, Envirofoam Technologies, Inc.				256-319-0137

• Is this Sandia work? ☒ Yes ☐ No. If Yes, list source of TA Funding: Project 37858 Task: 01

• Is the TA RELATED to an external collaboration? ☒ CRADA ☐ WFO ☐ NFE ☐ Informal ☐ None

If boxes checked, give: Name of Outside Partner Envirofoam ID number for agreement _____

• Is this work LDRD funded? ☐ Yes ☒ No

Project History:

1. Has the material in this TA been disclosed to non-Sandians? (journal, SAND report, etc.)..... ☒ Yes ☐ No
2. Are you planning to disclose the material in this TA?..... ☒ Yes ☐ No
3. Is the invention in use for its intended application?..... ☐ Yes ☒ No
4. Have you offered to let non-Sandians use the invention?..... ☒ Yes ☐ No
5. Is the material in this TA recorded in a lab notebook or other permanent record?..... ☒ Yes ☐ No

Please provide details and DATES for any questions marked "Yes".

Question 1: Material has been disclosed to Envirofoam Technologies, Inc., a joint developer; Question 2: Material has been disclosed to Envirofoam Technologies, Inc. a joint developer; Question 4: Envirofoam Technologies, Inc.; Question 5: SNL notebook 082001MDT, Page 66 and Envirofoam Technologies, Inc. meeting notes

Classification: Title U Total Disclosure U Detailed Description of TA U
 Authorized Derivative Classifier: Larry D Busted Org.: 6245 Date: 7/18/2002
SIGNATURES TA Preparer: Mark D. Tucker Org.: 6245 Date: 7/18/2002
 Witness (non-Originator): Larry D Busted Org.: 6245 Date: 7/18/2002
 (Printed Name) Larry D Busted

UCI-Patent Caution

Description

Sandia National Laboratories has recently developed DF-200, an enhanced decontamination formulation for the neutralization of chemical and biological warfare agents and biological pathogens, which is described in Technical Advance SD-6989 (Tucker, MD, 2001, "DF-200 - An Enhanced Formulation for the Decontamination and Mitigation of CBW Agents and Biological Pathogens", Sandia National Laboratories, SD-6989/S-97,643). Two formulations associated with DF-200 are summarized below:

DF-200HF (Enhanced Formulation for High Foam Applications):

2.00% Variquat 80MC (cationic surfactant)
1.00% Adogen 477 (cationic hydrotrope)
0.40% 1-Dodecanol (fatty alcohol)
0.05-0.10% Jaguar 8000 (cationic polymer)
0.50% Di(propylene glycol) Methyl Ether (solvent)
2.00-8.00% Bicarbonate salt (buffer and peroxide activator)
1.00-4.00% Hydrogen Peroxide (oxidant)
1.00-4.00% Propylene Glycol Diacetate or Glycerol Diacetate (peroxide activator)
80.00-92.05% Water

Note: The formulation must be adjusted to a pH value between 9.6 and 9.85 and is effective for decontamination of all agents tested.

DF-200NF (Enhanced Formulation for No Foam Applications):

2.50% Benzalkonium Chloride
1.00-8.00% Propylene Glycol Diacetate or Glycerol Diacetate
1.00%-16.00% Hydrogen Peroxide
2.00%-8.00% Potassium Bicarbonate
65.50%-93.50% Water

Note: The formulation must be adjusted to a pH value between 9.6 and 9.85 and is effective for decontamination of all agents tested.

The term 'High Foam' refers to the ability of a formulation to form a highly stable and persistent foam whereas a 'No Foam' formulation does not include foaming constituents that may be used for specific applications such as for the kill of biological organisms, batch processing (such as in chemical agent demilitarization neutralization processes), or spray applications. DF-200 utilizes a water-soluble peroxide activator (propylene glycol diacetate or glycerol diacetate).

The primary purpose for the delivery of DF-200 as a foam is to enable it to adhere to vertical surfaces and the underside of horizontal surfaces for a sufficient period of time to allow neutralization reactions to occur with chemical agents and biological pathogens (the required contact time is anywhere from 2 minutes to 45 minutes depending on the agent to be neutralized).

This TA presents a convenient method to formulate DF-200 for practical use. It uses a highly sorbent material (sorbitol - a sugar alcohol) to 'dry out' the liquid peroxide activator (propylene glycol diacetate or glycerol diacetate). The activator becomes a free flowing powder which is more convenient to handle in the field. Sorbitol is chemically unreactive in DF-200. In addition, it does not destroy the foaming properties of DF-200. The two powders (urea hydrogen peroxide and the sorbitol/activator/propylene glycol blend) may be added to the liquid portion of DF-200 together and treated as if they were one powder (although they must be stored separately).

DF-200HF with Solid Additives (no additional water required)**DF-200HF Part A (Liquid Foam Component):**

20.0 g Veriquat 80MC
 10.0 g Adogen 477
 4.0 g 1-Dodecanol
 8.0 g Diethylene Glycol Monobutyl Ether
 5.0 g Isobutanol
 50.0 g Potassium Bicarbonate
 18.0 g Potassium Hydroxide (the pH of Part A should be approximately 10.4)
 933.0 g Water

DF-200HF Part B (Solid Oxidant Component):

97.0 g Urea Hydrogen Peroxide

DF-200HF Part C (Liquid Peroxide Activator):

20.0 g Propylene Glycol Diacetate or Glycerol Diacetate
 40.0 g Sorbitol (Sorbitol Fines)
 20.0 g Polyethylene Glycol 8000 (Carbowax 8000)

Note: This formulation as described above will produce 1 liter of foam solution. The pH of the final formulation should be between 9.6 and 9.85. To prepare this formulation, use the following procedure: Mix Part B and Part C into Part A. After dissolution, use within 8 hours.

The performance of DF-200HF in the configuration shown above for neutralization of chemical agent simulants is given in Figure 1 below:

Simulant	% Decontaminated		
	1 Minute	15 Minutes	60 Minutes
Mustard (HD)	61	91	Not Detected
VX	28	92	>99

Figure 1: Reaction rates in kinetic testing for the DF-200HF.

Tests against the anthrax spore simulant (*Bacillus globigii* spores) demonstrated 99.9999% (7-log) kill after a 60 minute exposure to DF-200HF.

One method for mixing Part C is also presented. This method is described below:

1. Place the sorbitol powder in a mixing vessel.
2. While mixing, slowly add the liquid peroxide activator (propylene glycol diacetate or glycerol diacetate). Mix until a fine powder (no lumps) is achieved.
3. While continuing to mix, slowly add the polyethylene glycol 8000.
4. Let dry for approximately 24 hours. Re-mix to break up any lumps that have formed.

Project No. 37050

Book No. 082001

TITLE DF-200 Packaging

Form Page No. —

Drying (solidifying) propylene glycol diacetate
 use PVP (polyvinylpyrrolidone) as a
 binder - use PEG to increase tablet
 strength

Use this to bind organic solution

Vanquast

Isobornol

propylene glycol

propylene glycol diacetate

adogen

20g pgd + 40g bicarb
 + 30g bicarb
 + 10g vhp

+ 5g PEG

not free
flowing

good powder - slightly sticky

To Page No

Witnessed & Understood by me,

Date

Invented by

Date

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Book No. 6002M11

DE-200 Dried Activator

Page No. ...

-1-2 2g pgda
0.25g varcovat
10g Sorbitol
3g citric acid
nearly ffp

1-2-1 2g pgda
0.25g varcovat
5g Na citrate
25g 3g Na Bisulfate (pH-) } nearly ffp
3g Sorbitol } good ffp after
2 days

Test 21-3
20g water
5.1g 20-1-1
3.3g 21-2-1 } pH 9.8
B. layer forms

Test 21-4
20g water
5.1g 20-1-1
20-8-2 (3.3g) } pH ~~8.8~~ 9.3
B. layer forms

1-5 20g water + 5.1g 20-1-1
bilayer forms

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To Page No. ...

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5/23/02

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